

IN THE CLAIMS

- 1 (Withdrawn). A method comprising:
- forming a lower electrode having an upper and a lower side;
 - covering the upper side of said lower electrode with a protective layer;
 - forming a pore over said covered lower electrode;
 - opening said protective layer to said lower electrode; ~~and~~
 - forming a cup-shaped chalcogenide over said upper side of said lower electrode
- and touching said electrode; and
- forming a thermally insulating material in the cup-shaped chalcogenide.
- 2 (Withdrawn). The method of claim 1 further comprising:
- defining a singulated opening.[:,]
 - ~~forming a cup-shaped chalcogenide material in said opening; and~~
 - ~~forming a thermally insulating material in the cup-shaped chalcogenide.~~
- 3 (Withdrawn). The method of claim 2 including defining said chalcogenide using a planarization process.
- 4 (Withdrawn). The method of claim 3 including defining said chalcogenide using a chemical mechanical planarization technique.
- 5 (Withdrawn). The method of claim 2 including defining a sidewall spacer in said singulated opening.
- 6 (Withdrawn). The method of claim 5 including defining an electrode in said opening.
- 7 (Withdrawn). The method of claim 6 including using said sidewall spacer to define the cup-shape of said chalcogenide.

8 (Withdrawn). The method of claim 6 including forming a base layer over a substrate and forming said lower electrode over said base layer.

9 (Withdrawn). The method of claim 1 including sequentially forming said lower electrode and then said protective layer.

10 (Withdrawn). The method of claim 9 including etching said lower electrode and said protective film using the same mask.

Claims 11-30 (Canceled).

31 (Withdrawn). The method of claim 1 including forming the lower electrode and covering the lower electrode with a protective layer in the same chamber.

32 (Withdrawn). The method of claim 31 including depositing the lower electrode and the protective layer in the same deposition chamber.

33 (Withdrawn). The method of claim 32 including depositing the electrode and protective layer in the same deposition chamber without venting back to atmosphere.

34 (Withdrawn). The method of claim 1 including forming the protective layer of an insulator.

35 (Withdrawn). The method of claim 34 including forming the protective layer of a material in the form of silicon nitride.

36 (Withdrawn). The method of claim 35 including forming the silicon nitride in the form of Si_3N_4 .

37 (Withdrawn). A method comprising:
forming a lower electrode and a protective layer over said lower electrode of a phase change memory in the same deposition chamber without venting back to atmosphere.

Claims 38-40 (Canceled).

41 (Withdrawn). The method of claim 37 including forming the protective layer of an insulator.

42 (Withdrawn). The method of claim 41 including forming the protective layer of a material in the form of silicon nitride.

43 (Withdrawn). The method of claim 42 including forming the silicon nitride in the form of Si_3N_4 .

44 (Previously Presented). A method comprising:
forming an electrically insulating protective layer over a conductive lower electrode of a phase change memory;
forming a pore over said insulating protective layer;
etching through said pore to open up said protective layer;
forming a chalcogenide in said pore touching said lower electrode; and
forming the lower electrode and covering the lower electrode with a protective layer in the same chamber.

Claim 45 (Canceled).

46 (Previously Presented). The method of claim 44 including depositing the lower electrode and the protective layer in the same deposition chamber.

47 (Previously Presented). The method of claim 46 including depositing the electrode and protective layer in the same deposition chamber without venting back to atmosphere.

48 (Previously Presented). The method of claim 44 including forming the protective layer of an insulator.

49 (Previously Presented). The method of claim 48 including forming the protective layer of a material in the form of silicon nitride.

50 (Previously Presented). The method of claim 49 including forming the silicon nitride in the form of Si_3N_4 .